

REMARKS

Claims 1-8 are pending in the present application. Claims 1, 2 and 5-8 have been amended to remove the term “chain-extended polymer or”. Claim 5 has also been amended to correct the spelling of “monovalent” for purposes of clarification and not to limit its scope. Claim 5 has also been amended to correct a typographical error to recite “a benzene or naphthalene” in place of “an organic” with respect to the-R⁵ group to render it consistent with page 15, lines 13-14 of the specification for purposes of clarification and not to limit its original intended scope. Also please see claim 6. The amendments to the claims do not present any new matter or raise any new issues.

Claims 1-8 were rejected under 35 USC 102(e) as being anticipated by US patent 5,807,937 to Matyjaszewski et al. (hereinafter also referred to as “Matyjaszewski”). Matyjaszewski fails to anticipate claims 1-8.

With respect to the rejection under 35 USC 102(e), the Examiner mentions that “Applicant’s argument that the reference does not teach or achieve the stellar polymers is not persuasive, since the claims are not restricted to star polymers.” Accordingly, the term “chain-extended polymer or” has been deleted from claims 1, 2 and 5-8 by the above amendment, and therefore, the claims are restricted to the stellar polymers. As discussed in our previous response, some of which is repeated below for the examiner’s convenience, the present invention is novel and unobvious over the cited reference.

The present invention relates to a stellar polymer which is obtainable by polymerizing a vinyl monomer in the manner of living radical polymerization and adding a compound having two or more polymerizable carbon-carbon double bonds at the end of the polymerization. The present invention also relates to a composition which comprises, as an essential component, a hydroxyl-terminated polymer falling under the above polymer and a compound having, in each molecule thereof, not less than two functional groups reactive with the hydroxyl group.

Matyjaszewski (USP 5,807,937) relates to a controlled free radical polymerization process, of atom or group transfer radical polymerization, comprising radically polymerizing one

or more radically (co) polymerizable monomers in the presence of a system comprising an initiator, a transition metal compound, an amount of the redox conjugate of the redox conjugate of the transition metal compound, and any N-, O-, P- or S- containing ligand, to form a (co)polymer.

Since a star polymer in the reference is obtained by a method using a multi-functional initiator, the number of arms in the star polymer equals to the number of functional groups in the initiator. Namely, the method of the reference cannot produce the star polymer having arms whose number is more than the number of functional groups in the initiator. Moreover, a polymer in the reference obtained by polymerizing with crosslinking from the beginning of the polymerization, a molecular weight between crosslinking points is smaller. Accordingly, the method of the reference cannot produce the star polymer having a large number of arms.

On the other hand, the stellar polymer of the present invention can have more arms than the star polymer in the reference. Thus, the stellar polymer of the present invention is different from the star polymer in the reference. This is clear from the results of Examples in the present invention. In Example 1, a number average molecular weight (M_n) of a polymer before coupling is 4900, and M_n of the stellar polymer as the final product is 52100 which is more than ten times as large as that of the polymer before coupling. Namely, the stellar polymer has more than 10 arms. Furthermore, the stellar polymer of the present invention has many and long arms having the same length, since the length of the arm can be controlled by a polymerization condition (weight ratio of an initiator and a monomer). Thus, the stellar polymer of the present invention is also different from the hyperbranched polymer in the reference. In addition, the reference does not disclose the chain-extended polymer of the present invention.

In addition, as mentioned above, the reference cannot obtain the specific stellar polymer, and the composition of the present invention. Therefore, Matyjaszewski fails to teach the present invention to one skilled in the art. Accordingly, the present invention is also unobvious from the reference.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

In the event the Examiner believes an interview might serve to advance the prosecution of this application in any way, the undersigned attorney is available at the telephone number noted below.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 21581-00186-US3 from which the undersigned is authorized to draw.

Dated:

Respectfully submitted,

Electronic signature: /Burton A. Amernick/
Burton A. Amernick
Registration No.: 24,852
CONNOLLY BOVE LODGE & HUTZ LLP
1990 M Street, N.W., Suite 800
Washington, DC 20036
(202) 331-7111 (Phone)
(202) 293-6229 (Fax)
Attorney for Applicant